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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/928,914	08/13/2001	Alexander Kalnitsky	07927-033001/ MAXIM-279	8064
26191	7590	10/07/2003	EXAMINER	
FISH & RICHARDSON P.C. 3300 DAIN RAUSCHER PLAZA 60 SOUTH SIXTH STREET MINNEAPOLIS, MN 55402			TOLEDO, FERNANDO L	
			ART UNIT	PAPER NUMBER
			2823	

DATE MAILED: 10/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/928,914

Applicant(s)

KALNITSKY ET AL.

Examiner

Fernando Toledo

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 August 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-26,28,30,32 and 34 is/are rejected.
- 7) ☒ Claim(s) 27,29,31 and 33 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All   b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 7, 8 – 10, 14, 15, 17, 20 – 23, 28, 30, 32 and 34 rejected under 35 U.S.C. 102(b) as being anticipated by Isaac et al. (U. S. patent 4,483,726).

In re claims 1 and 9; Isaac in the U. S. patent 4,483,726; figures 1 – 2-6, discloses forming a first polysilicon layer (18 and 32) within the emitter window on at least the base region (16); forming an interfacial oxide (20 and 20-1) in an upper portion of the first polysilicon layer and forming a second polysilicon layer (30) on the interfacial oxide layer, wherein the second polysilicon layer is not in direct contact with the base region (Figure 1).

3. In re claims 2 and 10, Isaac discloses wherein the emitter window is approximately 0.1 to 0.2  $\mu\text{m}$  (column 2).

4. In re claim 4, Isaac teaches wherein the interfacial oxide layer is formed by exposing oxygen to the first polysilicon layer and annealing (figures 2-4 to 2-6).

In re claim 7, Isaac discloses wherein forming the second polysilicon layer includes ion-implanting dopants into the second polysilicon layer (column 3).

In re claim 8, Isaac shows further including after forming the second polysilicon layer to diffuse dopants from the polysilicon emitter and into the base region (column 3).

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5. In re claims 14 and 22, Isaac discloses forming a collector (26) within a substrate (10); forming a base region (16) on the collector region; forming an emitter dielectric layer (14) on the base region; forming an opening through the emitter dielectric layer to form an emitter window exposing a portion of the base region (figure 1); forming a first polysilicon layer (18 and 32) within the emitter window on at least the exposed base region; forming an interfacial oxide layer (20 and 20-1) in an upper portion of the first polysilicon layer; and forming a second polysilicon layer (30) on the interfacial oxide layer wherein the second polysilicon layer is not in direct contact with the base region (Figure 1).
6. In re claims 15 and 23, Isaac discloses wherein the emitter window is approximately 0.1 to 0.2  $\mu\text{m}$  (column 2).
7. In re claim 17, Isaac teaches wherein the interfacial oxide layer is formed by exposing oxygen to the first polysilicon layer and annealing (figures 2-4 to 2-6).
8. In re claim 20, Isaac teaches wherein forming the second polysilicon layer includes ion-implanting dopants into the second polysilicon layer (column 3).
9. In re claim 21, Isaac shows further including annealing after forming the second polysilicon layer (column 3).
10. In re claims 28, 30, 32, and 34; Isaac discloses wherein the second polysilicon layer is not in direct contact with an intrinsic base region (Figure 1).

***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 3, 5, 6, 11 – 13, 16, 18 and 19 and 24 – 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isaac.

In re claims 3, 5, 6, 11 – 13, 16, 18 and 19 and 24 – 26 Isaac does not teach that the first polysilicon layer is 30 to 100 Å thick, or that the interfacial oxide layer has a thickness of 5 to 50 Å, or that the second polysilicon layer is of 500 to 5,000 Å thick.

However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to since thickness is a process variable and finding the optimum or workable ranges of the thickness of a layer requires only routine experimentation by someone of ordinary skill in the art. Note that the specification contains no disclosure of either the critical nature of the claimed thicknesses or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen thicknesses or upon another variable recited in a claim, the Applicant must show that the chosen thicknesses are critical. *In re Woodruf*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

### ***Claim Objections***

13. Claims 27, 29, 31 and 33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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***Response to Arguments***

14. Applicant's arguments filed 29 August 2003 have been fully considered but they are not persuasive for the following reasons.

15. Applicant contest that the second polysilicon layer of Isaac is in direct contact with the base region.

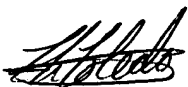
Examiner respectfully submits that second polysilicon layer 30 is in direct contact with the emitter 22 and not the intrinsic base 24, hence the arguments regarding the new limitations is moot.

***Conclusion***

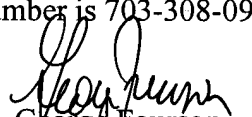
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fernando Toledo whose telephone number is 703-305-0567. The examiner can normally be reached on Mon-Fri 8am to 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306-2794. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



FToledo



George Fourson  
Primary Examiner  
Art Unit 2823